



US Army Corps
of Engineers
Detroit District

Great Lakes Update

Invasive Species Control Efforts

Invasive species have long been a threat to the health of the Great Lakes system. Usually introduced to the system accidentally and unknowingly, these species can compete with indigenous species for food and habitat. Species that have invaded the Great Lakes include the sea lamprey, zebra mussel, round goby, purple loosestrife and Eurasian milfoil. Asian Carp are a newer threat to the Great Lakes. The U.S. Army Corps of Engineers (USACE) is playing an active role in projects related to controlling the sea lamprey and preventing the invasion of the potentially devastating Asian carp.

One of the most notable and devastating invasive species is the sea lamprey. Sea lampreys are carnivorous eel-like fish. They are native to the Atlantic Ocean, but spawn in fresh water. At twelve to twenty-two inches long, lampreys are aggressive parasites with tooth filled mouths that they use to latch on to fish. Once the lamprey attaches to a fish, it uses its rough tongue to open a wound. Anticoagulants in the saliva of the lamprey keep the wound open for days or weeks until the lamprey is satisfied or the prey dies.

Initially, the natural barrier of Niagara Falls kept sea lampreys from spreading out of Lake Ontario. However, with improvements to the

Welland Canal in 1919, the lampreys were able to access the other Great Lakes. They were spotted in Lake Erie in 1921, Lake Huron in 1932, Lake Michigan in 1936 and Lake Superior in 1942.



Figure 1: Sea Lamprey and Wounded Salmon

In the 1940s and 50s, lampreys were a major factor in the demise of populations of Great Lakes predatory fish, most notably lake trout. In 1948, a committee with members from Federal, state and provincial governments formed to formulate a sea lamprey control plan. The Great Lakes Fisheries Commission (GLFC) formed shortly after in 1955.

Lampricide treatment of streams is a highly successful method of control and is the primary means to fight this Great Lakes invader. However, modern control of any unwanted

species is best accomplished by utilizing a variety of control methods, which is known as integrated pest management. USACE contributes to this task by constructing low head barriers and traps at critical locations. Barriers prevent lamprey from reaching spawning areas in tributary streams. Traps are used to remove pre-spawn females from the Great Lakes and to provide a source of male lampreys. Captured males are sterilized and released to spawn unsuccessfully with remaining females. USACE is planning to construct several new barriers and traps annually and currently has 19 projects in planning and design. The GLFC is looking to USACE to help meet their strategic vision of accomplishing at least 50% of sea lamprey suppression with alternative technologies and reducing lampricide use.



Figure 2: Sea Lamprey Trap at Sault Ste. Marie

A newer invasive threat to the environmental stability of the Great Lakes is the Asian carp. The aquaculture industry first introduced the Asian carp to the U.S. in the 1970s to improve water quality in fish-rearing ponds in southern states. By the early 1980s, Asian carp had escaped or been released into open waters. The extensive flooding of the Mississippi River basin in 1993 allowed more Asian carp to escape and provided extensive spawning and rearing habitat. They migrated up the Mississippi River to the Illinois River and have been found in the upper Illinois about 50 miles from Lake Michigan.

Depending on the species, Asian carp can weigh from 50 to 100 pounds and grow to be 4 feet

long. The carp's main food source is plankton. They can eat up to 40% of their body weight a day. Fishery experts are concerned that establishment of Asian carp in the Great Lakes ecosystem would deplete the food supply of native fish populations and eventually destroy the native populations of the commercial and sport fishing industries.

The only connection between the Illinois River and Lake Michigan is the Chicago Sanitary and Ship Canal. To combat the migration of Asian Carp into the Great Lakes ecosystem, USACE installed an electrical barrier in the Chicago Sanitary and Ship Canal in 2002 as a demonstration project. The barrier uses a series of electrodes to send an electric current through the water column. When fish attempt to swim past the barrier, the electric current makes them very uncomfortable and they turn back. USACE is also funding a new, more permanent barrier with a scheduled completion date in the fall of 2004. The new barrier is expected to halt the migration of Asian carp to Lake Michigan.

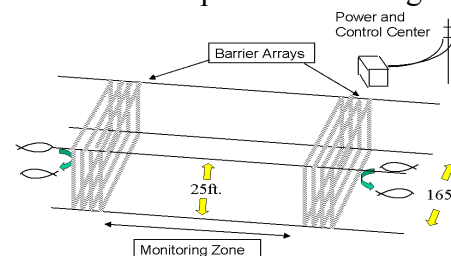


Figure 4. Conceptual Fish Barrier Design

As long as the Great Lakes system continues to be an International waterway, the threat of invasion by exotic species is real. With continuous monitoring and study, these threats can be avoided and the world's largest fresh water system can be kept environmentally stable.

For more information on invasive species please visit the Great Lakes Fisheries Commission at: <http://www.glfc.org/fishmgmt/exotic.asp>

Water Level Review and Expected Conditions

All of the Great Lakes declined less than average this past winter due to above average precipitation at the end of 2003 and below average evaporation throughout the late summer and fall. Over the next six months, water levels on Lakes Superior and Michigan-Huron are forecasted to be higher than last year's levels but are expected to remain below average. Water levels on Lake St. Clair, Erie, and Ontario are expected to be similar to last year's levels.

Winter 2003-2004 offered a mixed bag in terms of snow and ice across the basin. Snow water surveys and ice monitoring demonstrate these results.

The U.S. Army Corps of Engineers funds the National Weather Service's National Operational Hydrologic Remote Sensing Center (NOHRSC) to conduct a snow water equivalent survey of the Lake Superior basin every March. This survey measures the amount of water contained in the snowpack in the Lake Superior basin. The results can be used to get an indication of the amount of recharge the Lake Superior system will receive from snowmelt in the spring. The results of the survey conducted March 9-15, 2004 are shown below.

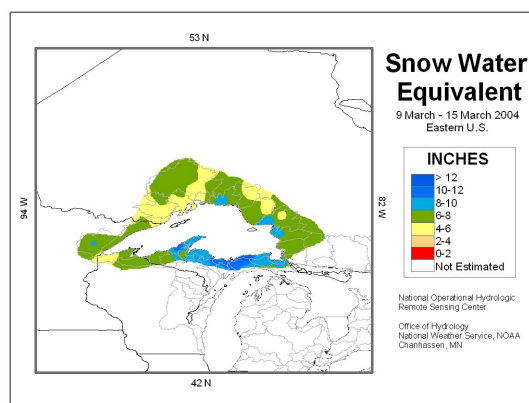


Figure 5: 2004 Gamma Snow Survey

The survey showed that snow water equivalent in the Lake Superior basin this year was 40 percent above average. The highest amounts of SWE were located in the major lake effect belts in the Upper Peninsula of Michigan.

Ice cover on the Great Lakes can vary from week to week and tends to follow trends in temperature. A relatively mild December was followed by well below average temperatures in January and early February 2004. Peak ice cover occurred during the end of January or beginning of February. Preliminary analyses by the Great Lakes Environmental Research Laboratory (GLERL) show near to below normal ice conditions on Lake Superior and near average conditions on Lake Erie. Analyses on the other Great Lakes are not yet complete.

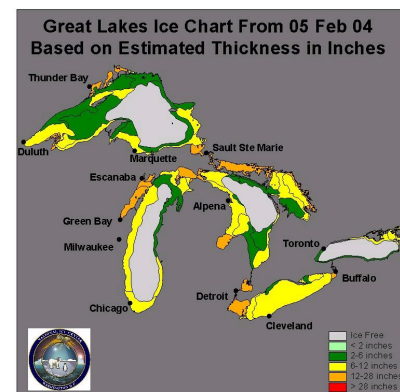


Figure 6: Great Lakes ice cover on 5 FEB 2004 (NATICE)

Public Meetings

The International Lake Superior Board of Control will hold a teleconferenced public meeting June 21, 2004 in four locations in the upper Great Lakes Basin. Location and times of the meetings will be announced on the Board's website in early May. For more details, visit www.ijc.org and click on Boards to locate the International Lake Superior Board of Control page.

Delivery of the Monthly Bulletin

Periodically, the U.S. Army Corps of Engineers, Detroit District renews the mailing list that we use to deliver the Monthly Bulletin of Lake Levels for the Great Lakes. At this time, we are offering our subscribers the choice of continuing to receive the Bulletin in exactly the same manner as you currently receive it or to begin receiving an email every month when the updated Monthly Bulletin is available for printing/viewing on the Internet. This is typically several weeks earlier than the date that you receive the Bulletin through the mail. **In order to continue receiving the Monthly Bulletin, you must register using one of the methods below.** If you do not register, you will no longer receive the Monthly Bulletin by mail beginning in August 2004.

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